

What is claim d is:

1. A method for optimizing refueling of rail vehicles with fuel for an internal combustion engine disposed in the rail vehicle, comprising the steps of
determining the instantaneous fuel consumption depending on an accurate fuel consumption measurement of the internal combustion engine and supplied to an internal main computer,
computing an added-up consumption, from which the fuel level in the fuel tank is determined,
connecting the internal main computer in the rail vehicle via a GSM system with an external master computer,
supplying the signals of a GPS system to the internal main computer of the rail vehicle for the purpose of determining the location of the rail vehicle.
2. The method according to claim 1, further comprising the step of
determining the actual fuel consumption and the fuel consumption of the rail vehicle (2) added over a time interval at an arbitrary location in the rail network.
3. The method according to claim 1, further comprising the step of transmitting the data of an instantaneous location, of the instantaneous fuel level and the added-up fuel level to the master computer for determining refueling stations located in the rail network to which the rail vehicle is traveling.

4. The method according to claim 1, wherein the master computer recognizes the capacity of the individual refueling stations and prevents a large number of rail vehicles from being directed to the same refueling station, to prevent exhaustion of the capacity of the refueling station.

5. The method according to claim 1, further comprising the step of providing the master computer with price information of the different refueling stations, such as to arranging a price-optimized refueling of the rail vehicle.

6. The method according to claim 1, further comprising the step of determining the actual speed of the rail vehicle with the master computer, and correlating the speed with the fuel level of the fuel tank.

7. The method according to claim 1, further comprising the step of including in the master computer a fleet management program for regulating the fuel level of the tank during refueling.

8. The method according to claim 7, further comprising the step of programming the master computer such that the rail vehicle is in the rail network with a tank, filled to maximally half capacity, and simultaneously monitoring to provide a reserve.

9. The method according to claim 1, further providing the step of

providing for an alarm when an excessive fuel consumption is detected and directing the rail vehicle to a service station for determining the causes for the high fuel consumptions.

10. The method according to claims 1, further providing storing specific information of high- risk locations in the master computer and providing information directing the rail vehicle past the high- risk locations.

11. A device for optimizing refueling of rail vehicles with fuel for an internal combustion engine disposed in the rail vehicle, comprising

(a) means for determining instantaneous fuel consumption depending on a very accurate fuel consumption measurement of an internal combustion engine;

(b) an internal main computer for receiving fuel consumption information determined in (a);

(c) an added-up consumption is computed, from which the fuel level in the fuel tank is determined,

(d) an external master computer;

(e) a GSM system connecting the external computer to the internal main computer in the rail vehicle is connected via a GSM system to the external master computer,

(f) means for supplying signals of a GPS system to the internal main computer of the rail vehicle for determining the location of the rail vehicle;

(g) a fluid measurement device for measuring the fuel inflow to and the fuel

return flow from the internal combustion engine.

12. The device according to claim 11, wherein the fluid measuring device is one of a ultrasound flow meter, a Coriolis-type meter, a magnetic-inductive meter, a displacement meter and a differential pressure meter.

13. The device according to claim 11, wherein the fuel measuring device is a screw-type volumetric measuring device flow meter.

14. The device according to claim 13, wherein the pulses of the screw-type volumetric measurement device is read using an electric pulse selector and the output signals of the pulse selectors are supplied to the computer in the rail vehicle.

15. The device according to claim 11 wherein the computer for measuring the fuel consumption is connected with a longtime data logger.

16. The device according to claim 11, wherein the fluid measuring device is connected to an external master computer via a GSM connection.

17. The device according to claim 11, wherein the fluid measuring device is connected to a GPS system .